

NOTES ON NEW SOUTH WALES ORCHIDS. II.

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(Eleven Text-figures.)

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DISCOVERY OF A REMARKABLE NEW GENUS AND SPECIES AT BULLAHDELAH.

In the last week of November, 1931, Mr. E. Slater, of Bullahdelah, was scraping away fallen leaves and debris from about the roots of a few plants of the orchid *Dipodium punctatum*, which he had been asked to procure for Mr. and Mrs. F. Fieldsend, of East Maitland. These plants were on the western slope of the Alum Mountain, only a short distance above Bullahdelah township. As he was about to dig, his attention was caught by a curious little object on the surface of the soil he had just exposed. Investigating, he found this to be the top of a peculiar form of plant quite strange to him; and suspecting in spite of its withered flowers that it might be of orchidaceous character, he sent it with the *Dipodium* plants. Mr. and Mrs. Fieldsend, after inspecting it, sent it on to me for my opinion. Notwithstanding the fact that the flowers had evidently been withered for some considerable time, a few minutes' investigation sufficed to convince me that Mr. Slater had made what, from the point of view of orchidology, may fairly be termed a sensational discovery. It will be remembered that in 1928 no little stir was created in botanical circles by the accidental discovery at Corrigin, in Western Australia, of an orchid which apparently germinates, grows, and comes into flower beneath the surface of the soil. This plant was described by Dr. R. S. Rogers (*Journ. Roy. Soc. W. Aust.*, xv, 1928) under the name *Rhizanthella Gardneri*. Of the orchidaceous character of Mr. Slater's Bullahdelah plant I had no doubt directly I had examined a withered flower, and its habit and general character were immediately suggestive of *Rhizanthella*. At once I communicated with Mr. Fieldsend, asking that Mr. Slater be urged to make a further search, and at the same time I wrote to Dr. H. L. Kesteven, of Bullahdelah, requesting him to co-operate. Within a week these gentlemen sent me four more specimens. Three had fully matured ovaries with remnants of long-withered flowers; the fourth, a smaller one, was in a far less advanced condition and the flowers, though withered, could be dissected sufficiently after softening to show all the parts clearly. No further specimens have been found. On 26th December I was able to pay a very brief visit to Bullahdelah, and Dr. Kesteven kindly took me to the spot where the discovery was made. It is only a few feet away from the trolley-line of the old Alum Company's works, close to some of their dumps. The ground is barren and stony. Underneath a stringybark eucalypt was an accumulation of dead leaves, amongst which several stems of *Dipodium* were still standing. I had not time to make a search for the new plant, but the ground for yards around had been thoroughly investigated by Dr. Kesteven and Mr. Slater.



I had sent the most recently withered specimen to Dr. R. S. Rogers, after extracting two flowers from the capitulum. From Dr. Rogers's comments, added to the results of my own examination of all the material available, I am able to supply the following description, which will doubtless require to be supplemented when, as we hope may be the case next season, flowers are discovered in a less advanced stage.

Subtribe RHIZANTHELLINAE Rogers.

CRYPTANTHEMIS, n. gen.

Herbae terrestres aut subterraneae, *Rhizanthellae** consuetudinem facitantes. Sepala petalaeque separata, membranea. Sepalum dorsale concavum, incurvum, fere acuminatum. Sepala lateralia concava, basi lata, apice tenuissima. Petala parviuscula, acuta. Labellum indivisum, latum, carnosum, supra concavum, ad columnae pedem ungue affixum. Columna cum appendicibus duobus, non ad sepalum dorsale adnata. Stigma in altum editum. Anther in speciminibus marcidis obscurus.

Species singula adhuc nota, Novae Cambriae orientalis incola.

Herbaceous plants, terrestrial or subterranean, following on the lines of *Rhizanthella* in habit. Sepals and petals not all equal in dimensions, quite free. Dorsal sepal concave and incurved. Lateral sepals concave, very slender in front. Petals relatively small, acute. Labellum fleshy, entire, broad, concave above, attached to the foot of the column by a claw. Column with two appendages; quite free. Stigma placed high. Anther in my specimens obscure. Ovary large.

CRYPTANTHEMIS SLATERI, n. sp.

Herba parviuscula, saprophytica, plane partimve subterranea. Rhizoma crassum, 6-10 cm. longum, plus minusve bracteis latis sucosis imbricatis tectum, ubi nudum cum pilis paucissimis et tuberculis minutis pluribus. Unum specimen cum ramo parvo tenuique. Flores, parvi, numerosi, sessiles, in capitulo terminale conferti, ad centrum versi, sub arborum scobe summum solum attingentes? Flores externi majores. Sepala petalaeque dense reticulata, in medio cum vena conspicua. Sepalum dorsale 5-8 mm. longum. Sepala lateralia majora, ad bases latissima, fere ad medium subito contracta. Petala breviora, certe interdum denticulata. Labellum in floribus externis, quantum 3 mm. longum, late ovatum, subacutum, cum marginibus serratis, ad apicem pedis columnae ungue tenui affixum. Labellum in floribus intimis minutum, prope lanceolatum cum ungue longo. Columna in speciminibus marcidis aliquantum obscura, certe separata, ad apicem appendicibus tenuibus curvatisque duobus praedita. Anther verisimiliter biloculatus, pollinia non adhuc observata. Ovarium post floris mortem magnopere tumescens, sucosissimum, obscure quadrilaterale. Semina matura ficoidea, in longitudinem costata.

A small herbaceous saprophyte, wholly subterranean, with the possible exception of the flowers, which in the specimens so far discovered just reach the surface of the soil (in a withered state) hidden beneath dead leaves and other debris. Rhizome stout, up to 10 cm. long, in one case with a short and rather slender branch: more or less covered with broad, fleshy, imbricate bracts

* Vide *Journ. Roy. Soc. W. Aust.*, xv, 1928.

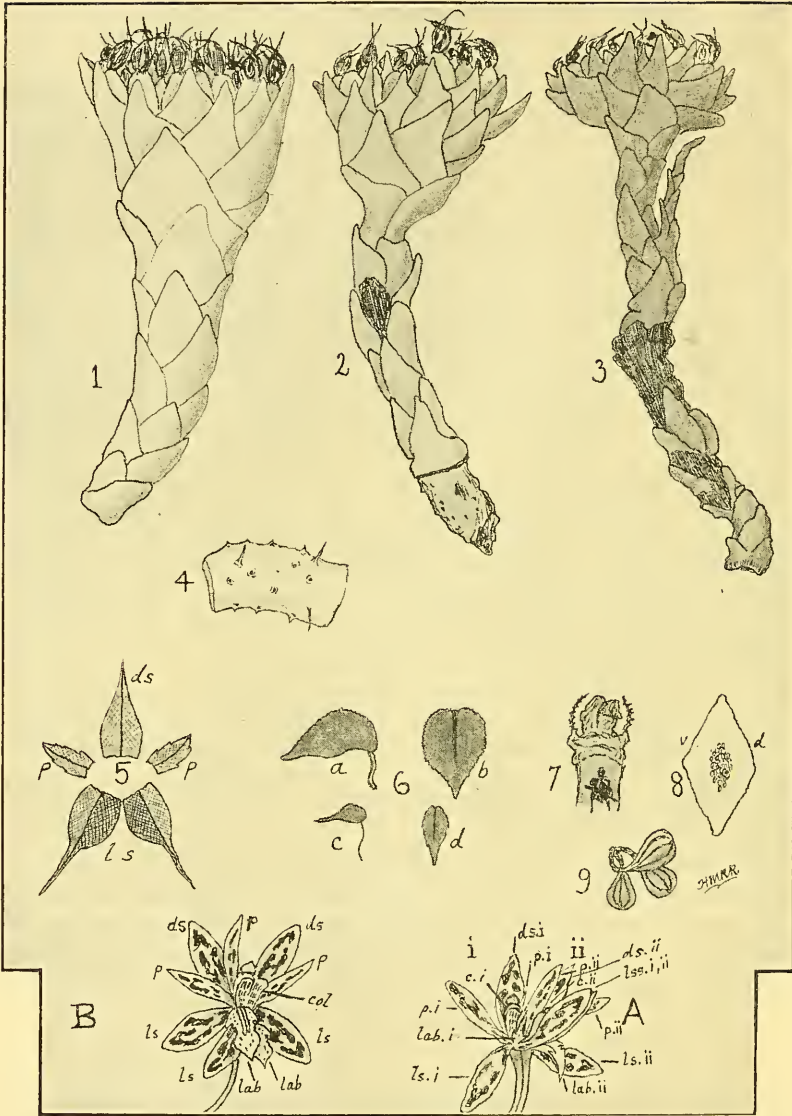
from white to dingy brown in colour. Uppermost bracts elongated, scarcely spreading, subtending the outer flowers. Bractless portions of rhizome with a very few short, scattered white hairs and far more numerous minute tubercles. Rhizome expanding at its upper end into a broad capitulum containing 15-30 crowded flowers, sessile on irregularly quadrilateral ovaries. Flowers facing inwards, the outer ones larger than the inner. (Colours uncertain owing to withered condition.) Sepals and petals quite free, all with a prominent mid-vein and densely reticulate. Dorsal sepal 5-8 mm. long, broad below, but usually tapering to an acuminate point, concave and curving to form a hood over the column. Lateral sepals larger, very broad and concave to about the middle, then suddenly contracting and becoming almost filiform: longitudinally the half on the inner side of the mid-vein darker than that on the outer side. Petals about half as long as the lateral sepals, acute, margins usually denticulate. Labellum in the outer flowers up to 3 mm. long, broadly ovate-mucronate, concave above, fleshy and apparently glandular-rough, margins serrate or minutely denticulate; attached at its base to a projection from the column-base by a ribbony claw one-third to one-half its own length. Labellum in the small inner flowers minute, almost lanceolate, with a claw as long as itself. Column in the withered flowers somewhat obscure in detail, quite free, a little shorter than the petals: two very slender, dark appendages near the summit apparently curving round the anther. Stigma high up. Anther obscure, but in one flower apparently 2-celled, pollinia not seen. Ovary white, but becoming dingy and greatly swollen as it matures, very succulent. Ripe seeds fig-shaped, brown, ribbed longitudinally.

Dr. Rogers was unable to detect, in the flower he dissected from the single specimen sent to him, the denticulate margins of the petals, and the sepals appeared to be merely acute. In the five flowers which I dissected from two specimens, the details in these respects were as I have described above.

Alum Mountain, Bullahdelah, late November, 1931, E. Slater, and a week later, E. Slater and Dr. H. L. Kesteven.

The affinities of this remarkable orchid with *Rhizanthella Gardneri* Rogers are sufficiently obvious to warrant its inclusion in the subtribe Rhizanthellinae if, as Dr. Rogers himself suggests, the description of this subtribe be modified to admit genera having flowers with free segments. The following comparison, however, will serve to indicate that the new plant cannot be placed within the genus *Rhizanthella*.

<i>Rhizanthella</i> .	<i>Cryptanthemis</i> .
Flowers succulent and directly continuous with their ovaries so that the point of union is externally obscure.	Sepals and petals membranous, flower continuous with the immature ovary but the point of union quite obvious.
Sepals and petals more or less connate into a tube or bell.	Sepals and petals quite free.
Labellum relatively large, on a very short claw.	Labellum rather small, in the central flowers minute: claw varying in length, in central flowers as long as the labellum.
Column at least partly adnate to the dorsal sepal, and without appendages.	Column quite free, with two apical appendages.



Text-figs. 1-9.—*Cryptanthemis Slateri*. n.g. et sp.

1, 2, 3.—Specimens of the plant, showing capitula of withered flowers. No. 1 was in better condition than 2 and 3. No. 3, in which the flowers were scarcely recognizable, was found lying partly exposed. It was the only specimen seen with a branch to the rhizome. The bracts of the rhizome appear to darken with age and exposure.—4. Portion of rhizome without bracts, showing hairs and tubercles.—5. Sepals and petals.—6. Labellum: *a*, *b*, side and front views of labellum in an outer flower; *c*, *d*, the same in an inner flower.—7. Upper part of column, showing appendages, shrivelled anther, and particles of earth, etc., adhering to stigma.—8. Cross-section of ovary; *d*, dorsal; *v*, ventral surface.—9. Ripe seeds.

1-3 approx. nat. size; 4-9 variously enlarged.

The white hairs on the bractless portions of the rhizome of *Rhizanthella*, which in the plates accompanying Dr. Rogers's description are shown to be very numerous, are represented in *Cryptanthemis* by only a very few scattered units, but there are numerous minute tubercles which in some cases are elongated upwards. Both hairs and tubercles may be the remnants of a root-system. From my examination of the specimens, and after inspecting the site of the discovery, I am inclined to believe, as Dr. Rogers suggests of *Rhizanthella*, that the flowers of *Cryptanthemis* actually develop and open beneath the surface, the capitulum of ripening ovaries subsequently pushing up, but still remaining hidden under debris. If this is the case, we may hope that the association with *Dipodium* will prove to be more than accidental, for otherwise the discovery of fresh flowers will be a very difficult problem.

I desire to express thanks to Messrs. Slater and Fieldsend and Dr. Kesteven for their ready help, without which this description could not have been given, and to Dr. Rogers for his valuable comments and suggestions. I may point out, in concluding, that the only rhizome branch yet seen in *Cryptanthemis* is nearly parallel with the rhizome itself, and not approximately horizontal, as the branches are described in Rhizanthellinae. The *Cryptanthemis* branch, however, is very small and possibly immature, and the points of agreement in habit and character between the Corrigin and Bullahdelah plants seem to me to justify their inclusion in the same subtribe at least until both are more thoroughly known.

I have given the plant the generic name of *Cryptanthemis* in allusion to its habit, for even if it should be found that the flowers open on the surface of the soil, they still remain hidden beneath bush debris. I think it only right that Mr. Slater's keen faculty of observation in the circumstances of this striking discovery should be recognized, and I have therefore named the species after him.

DIURIS CUNEATA Fitzg.

In January, 1932, Dr. F. A. Rodway sent a fine specimen of *Diuris* from Bowen Island, Jervis Bay. I think there can be no doubt that this is Fitzgerald's *D. cuneata*. In my specimen these are 9 flowers, but only 2 were living when it reached me; these lasted for several days. The labellum and column agreed almost perfectly with Fitzgerald's figures. The lateral sepals were relatively longer—9 cm. in one flower; the petals were hardly spotted as in Fitzgerald's plate, but irregularly tinged with deeper colour. After watching one flower gradually open and mature, I am of opinion that the basal portion of the

Text-figs. A, B.—Two abnormal specimens of *Cymbidium canaliculatum* R.Br. on a plant grown by Mr. F. Fieldsend of East Maitland. $\times \frac{2}{3}$ approx.

A consists of two flowers, i and ii, with their ovaries and stalklets completely united, a narrow channel marking the union. In i, the labellum is almost abortive (A, *lab. i*), and is erect; the petal nearest ii is also very small (*p. i.* middle of specimen). The other petal (*p. i.* on left), dorsal sepal (*ds. i*) and left lateral sepal (*ls. i*) are normal, as is the column (*c. i*). The right lateral sepal is united along its dorsal surface with the left lateral sepal of ii (*ls. i, ii*). All other parts of ii are normal.

B consists of two flowers united into a "compound" flower on a single ovary and stalklet. There are two dorsal sepals (*ds.*), neither of them directly behind the column: three petals (*p.*), the middle one occupying the place of a normal dorsal sepal: three lateral sepals (*ls.*), the middle one under the labella but twisted slightly to the left: two labella, one above and slightly to the left of the other: and two columns completely united, the right-hand one without any anther.

petal is really an unusually broad claw or stalklet. The petals in my two flowers were reflexed at maturity from the base of the broadest part or lamina, but not from the base of the whole petal. In Fitzgerald's plate (Vol. ii, part 4) the topmost flower seems to have petals broadly clawed. The Bowen Island plant is more robust than that figured by Fitzgerald, which came from Cootamundra.

PTEROSTYLIS BAPTISTII Fitzg.

In October, 1931, Dr. Rodway found this fine Greenhood orchid near Huskisson, Jervis Bay. So far as I am aware, this constitutes a new southern record for the species.

DENDROBIUM TERETIFOLIUM R.Br. var. FAIRFAXII.

In These PROCEEDINGS, lvi, Part 5, 1931, I described a peculiar form of this orchid found by the Rev. E. Norman McKie in the Guyra district. Mr. McKie has reminded me that I was mistaken in recording it as growing on a tree. It was on a mossy and lichen-covered granite rock, at an elevation of 4,500 ft. In view of its characteristics, this circumstance seems to strengthen the hypothesis that it may be a natural hybrid with *D. striolatum* F.v.M.

PRASOPHYLLUM ACUMINATUM Rogers.

This species, which was named by Dr. Rogers a few years ago from specimens sent by me from Bullahdelah and Paterson, extends at least 100 miles further north than the former locality. In January, 1932, I found it in great abundance near Port Macquarie, with many remarkably fine specimens.

This may be a convenient place to call attention to an important revision of certain of the "pigmy" species of *Prasophyllum* by Mr. W. H. Nicholls (*Vict. Nat.*, Oct., 1931), since it affects the identification of more than one New South Wales form. The late Messrs. Maiden and Betche (These PROCEEDINGS, xxxiv, 1909) described a small *Prasophyllum* found by Mr. J. L. Boorman near Braidwood as a variety of Brown's *P. fimbriatum*. Mr. Nicholls has examined this plant and found it identical with what has for many years passed in Victoria as *P. Archeri* Hook. But he demonstrates with convincing evidence that the real *P. Archeri* is the plant named by C. Stuart *P. intricatum*, and (in a variety) by Ewart and Rees *P. ciliatum*. The wrongly-named *P. Archeri*, which is certainly not identical with *P. fimbriatum*. Mr. Nicholls has now named *P. Morrisii*. From our New South Wales *Prasophylls*, therefore, the name *P. intricatum* must be deleted, and replaced by *P. Archeri* Hook.; while the Braidwood plant becomes *P. Morrisii* Nicholls. A full description of the latter is given by Mr. Nicholls in the paper referred to.

CYMBIDIUM CANALICULATUM R.Br.

In the late spring of 1931 I received two very interesting teratological specimens of this orchid from Mr. F. Fieldsend, of East Maitland. The description given with the accompanying text-figures A, B, will, I think, be found sufficient to explain the abnormal formation of these flowers without any further comment. Both were on a plant grown by Mr. Fieldsend in his fernery. This handsome *Cymbidium*, which is often found in immense clumps requiring several men for handling, appears to have a peculiar range of habitat in New South Wales.

I have not heard of it south of Newcastle, but in the Hunter and Paterson valleys it is quite common, and unfortunately too conspicuous for its own welfare. On the western slopes of New England it is extraordinarily abundant, and I have myself seen it well out on the great western plains. In my own experience it is the only "tree orchid" found west of the Dividing Range. It ascends the New England heights for at least 3,000 ft., but I have not heard of its occurrence on the tableland, and I am doubtful if there are authentic records of it anywhere along the North Coast. I discovered a solitary plant on the eastern base of the Alum Mountain at Bullahdelah, and that is my only record of its existence in the neighbourhood of the coastal rain-forests.
